

# AffinityWater

## AFW13 - Base investments



# Affinity Water: PR24

## Base Costs – Appendix

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## Summary

This appendix sets out our proposed base total expenditure (botex) investment programme for 2025-2030.

We have built our investment programme from detailed business cases. Each business case was developed by experts working in collaborative teams across the business and signed off by a senior sponsor. Each business case presented a range of options to mitigate different levels of risk. We costed each option using our unit costs library, supplemented with supply chain intelligence and benchmarking where relevant. We justified our recommended investment option by setting out the balance of costs, performance, and risk.

In parallel, our long-term strategies, our customer research and stakeholder engagement have shaped and informed the programme. Our botex programme has been aligned and optimised with our enhancement investments throughout the process; both at the asset and site level and at the strategic levels. More information on our planning, optimisation and governance, processes and procedures are presented in **Chapter 7.6: Our Investment Planning Approach**. We set out further detail in appendix **AFW 8 – Our investment development process**.

The summation of each recommended option from all the business cases gives our botex investment programme for 2025-2030.

We have applied rigorous challenge and governance to all business cases, including senior sponsorship, executive-led Red Teams, and internal and external assurance to ensure our 2025-2030 botex investment programme represents best value for customers.

Our botex investment programme summary for 2025-2030 is shown in Table 1 together with a comparison to our 2020-2025 Final Determination. Our 2025-2030 botex investment programme by price control is presented in Figure 1.

Table 1: Our botex investment programme summary (post the impact of Frontier Shift and Real Price Effects)

	2025-2030		2020-2025 Final Determination	
	Water Resources £m	Water Network Plus £m	Water Resources £m	Water Network Plus £m
<b>Operating Expenditure inc. renewals</b>	113	790	66	724
<b>Capital Maintenance</b>	33	437	38	452
<b>Control Total</b>	<b>146</b>	<b>1,227</b>	<b>103</b>	<b>1,176</b>
<b>Total for period</b>	<b>1373</b>		<b>1279</b>	

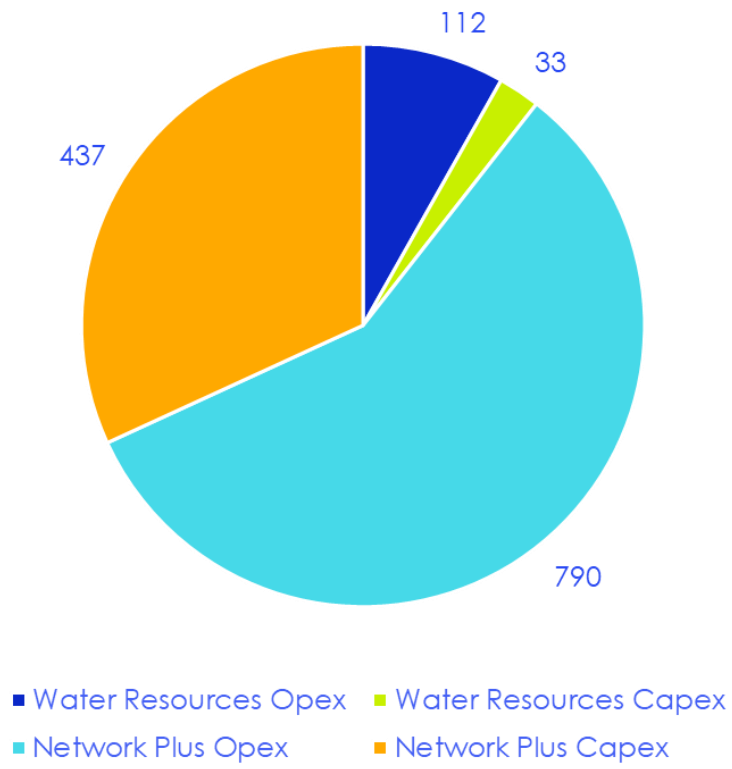


Figure 1: Our botex investment programme 2025-2030, £m

# Base Total Expenditure

## Introduction

Our botex investment programme for the 2025-2030 period includes the costs to run our business day-to-day and maintain our assets, as well as deliver our ambitious package of performance commitments. Historically, botex has represented circa 80% of water company expenditure. In the 2025-2030 period, we forecast this to fall to 70% of our total portfolio, reflecting the level of expenditure required to secure water supplies for the future and enhance our service.

Our botex investment programme underpins the core services that our customers expect from their water supplier. Much of the expenditure in our botex investment plan provides direct benefits to our performance commitments, including water quality, leakage, and interruptions to supply, which our customers tell us is important and of high priority.

Customer valuations are central to our services measure framework, helping us understand customers' priorities and willingness to pay for services. These customer valuations are integrated into our value framework in Copperleaf Portfolio, driving our portfolio optimisation and best-value decision making in where we invest. We explain our approach to decision making and investment optimisation in **AFW08 – Our investment development process**.

Our focus on best-value investment enables us to propose ambitious improvements in our performance from base expenditure that balances short-term performance improvements with long-term sustainable asset health, as shown in Table 2.

Table 2: Material performance improvements derived from our botex investments

PC	2024-25	2029-30	Performance improvement from base
Water supply interruptions	00:04:55	00:04:11	15%
Leakage	20.0%	28.4%	42%
Mains repairs	142.0	132.6	7%
Unplanned outage	2.5%	2.1%	16%
Low pressure	01:57:54	01:43:43	12%

Our botex investment programme for 2025-2030 is £1,373m. This is circa 7% larger than our Final Determination for 2020-2025, reflecting real price effects on key costs such as energy (discussed on page 41) and additional operational costs linked to our growing asset base, reflected in our forecast RCV growth of over £300m during the 2020-25 period.

We recognise the impact of the current economic climate on our customers, and the associated affordability challenge. We understand our role to balance the requirements of investing for the long term at a price that is affordable for our customers in the 2025-2030 period. Our plan therefore includes stretching efficiency ambitions that will continue to allow us to deliver at forecast upper quartile efficiency levels.

## Base capital expenditure: maintaining our assets to deliver performance improvements

We propose base capital expenditure (capex) of £470m for the period 2025-2030, slightly reduced from £489m in the current period (Final Determination 2020-2025, in 2022/23 prices). Our base capex investment plan covers the costs of maintaining our treatment and network assets, and the delivery of our ambitious package of performance commitments. These costs include programmes that are designated as Infrastructure Renewals Expenditure.

Our base capex investment portfolio delivers sustainable levels of asset health in the long term, with planning based on asset deterioration models covering a 25-year period. This allows us to consider the impacts of our interventions on performance to understand and deliver the optimal levels of maintenance required. This base capex has been categorised and the split has been illustrated in Figure 2.

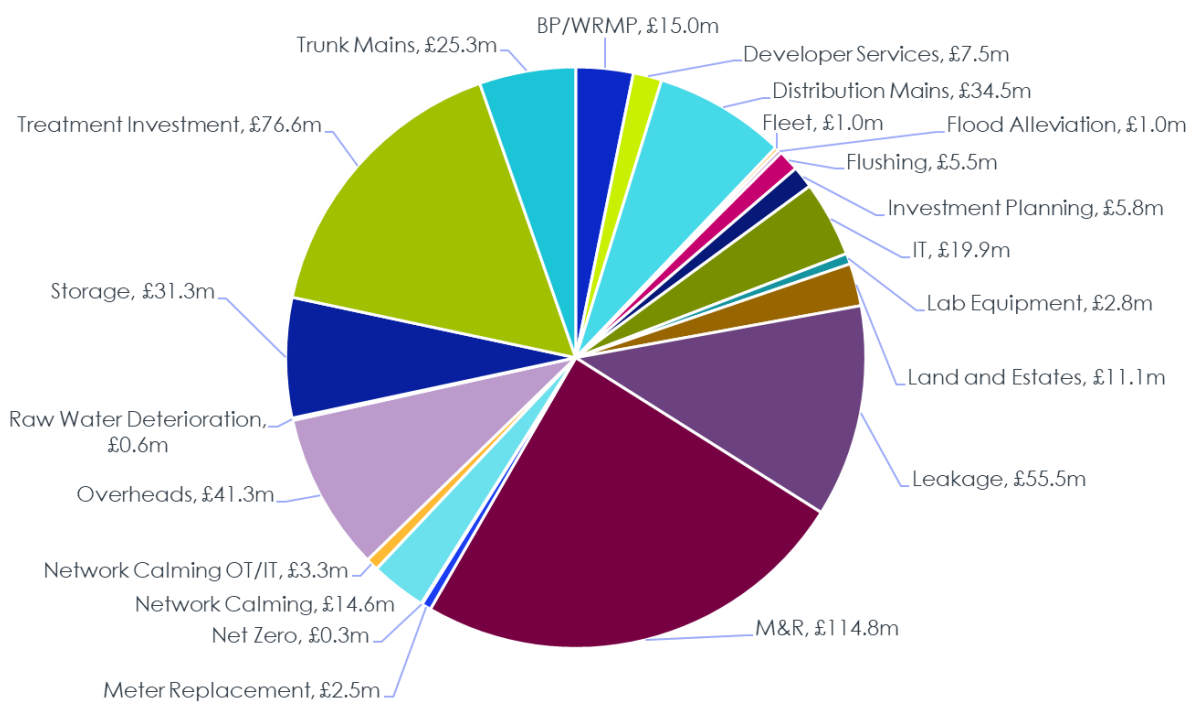


Figure 2: Base capex by category



## Base operating expenditure: supplying water to our customers

Our base operating expenditure (opex) totals £904m for the period 2025-2030 (excluding renewals), increased from £790m (Final Determination 2020-2025, in 2022/23 prices).

Our base opex portfolio covers the costs of abstracting, treating, and supplying water to our customers, as well as a series of interventions to deliver our performance commitments and the costs to support the running of our business. We also include an allowance of £2.8m in respect of the costs of issuing new equity to support our investment portfolio. These base opex costs have been categorised and illustrated in Figure 3.

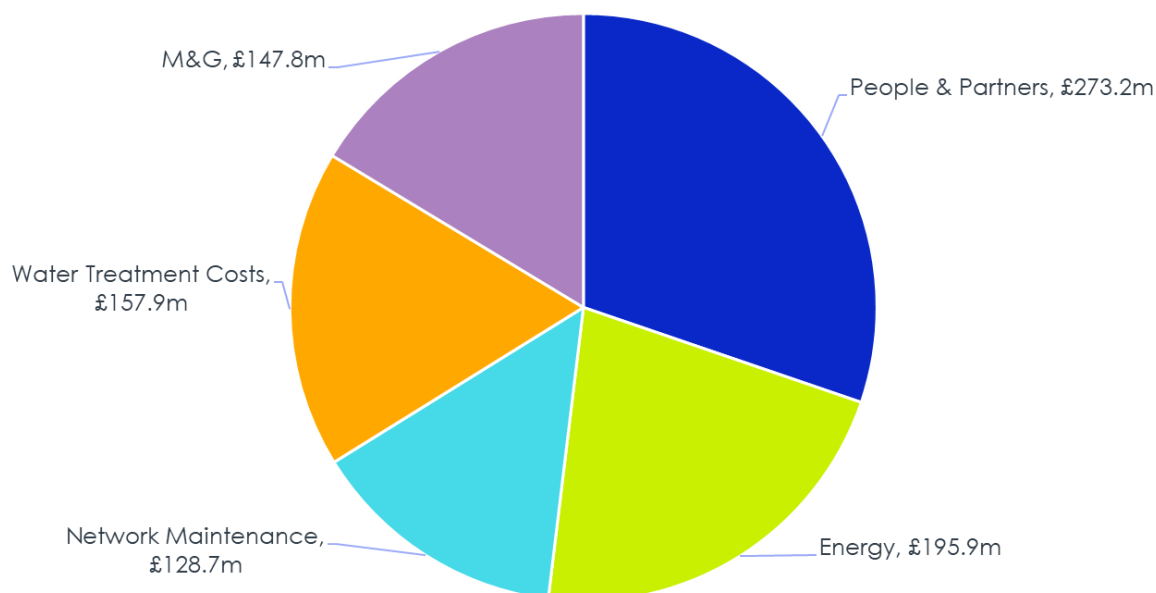


Figure 3: Base Opex by Category

## Base total expenditure programmes: best value performance

Whilst many of our activities can be clearly delineated between capex and opex investments, we manage many of our key functions on a totex basis, removing constraints in how we invest to enable best value decision making. These activities include many of our core functions such as water network repair and maintenance and water quality laboratories, in addition to enabling functions such as information technology and management of our land and estates. We provide further details of these on a totex basis from page 29.

## Developing our base totex investment programme

### Overview

We developed our investment programme from detailed business cases. Each business case was built by subject matter experts working in collaborative teams, which have been signed off by a senior sponsor. Each business case presented a range of options to mitigate different levels of risk and deliver different levels of benefits. We costed each option using our unit costs library, supplemented with supply chain intelligence and benchmarking where relevant. We justified our recommended investment option by setting out the balance of costs, performance, and risk.

In parallel, our long-term strategies, our customer research and stakeholder engagement have shaped and informed the programme. Our totex programme has been aligned and optimised with our enhancement investments throughout the process; both at the asset and site level and at the strategic levels. More information on our planning, optimisation and governance, processes and procedures are presented in **Chapter 7.6: Our Investment Planning Approach**. Further detail is laid out in appendix **AFW 8 – Our investment development process**.

### Risk and Value process

Risk and Value (R&V) is a process that we apply throughout the asset investment planning cycle from the original need or risk recognition through to outline design and development of the detailed solution. Our R&V process identifies solutions that achieve efficiency savings through a structured process based upon an assessment of risk, opportunity, and proposed cost for mitigating the risk. R&V is applied to all areas of our investment programme.

The first phase of R&V is to fully determine the risks/opportunities for the service to our customers. Once a risk is fully defined, comprehensive root cause analysis is applied to determine the right source of the asset failures and the impact these have on the business/service.

R&V follows a defined and templated process to achieve robust, best value decision making. We have developed different R&V runways to apply the level of rigour and challenge appropriate to the risk and level of investment required. For example, our 'full' R&V process is delivered through facilitated face-to-face workshops with the relevant stakeholders and used to investigate the risks with the highest consequence costs and investment options, while our 'desktop' process is more agile and suits smaller investment needs. All runways follow the same five-step process, as presented in Figure 4.

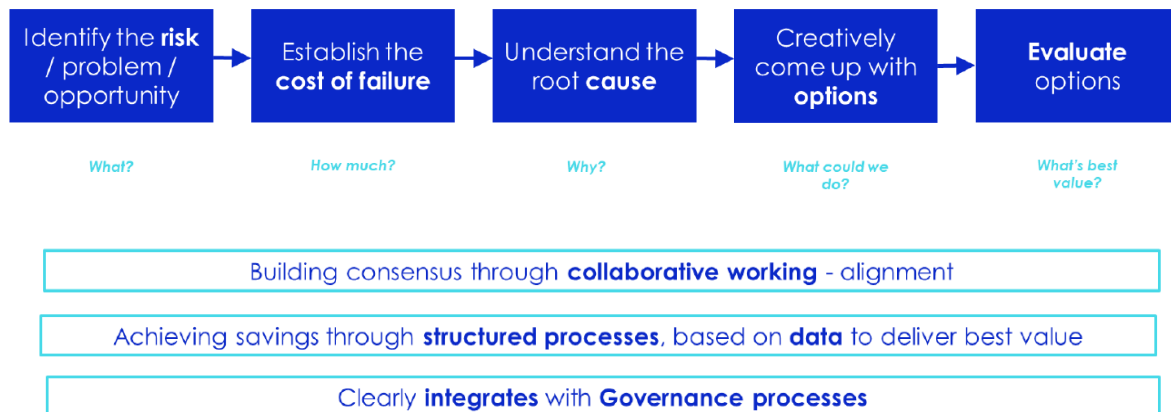


Figure 4: The steps of our R&V process

## Identify the risks

The objective of this step is to ensure that all workshop attendees have a shared understanding of the issue at hand. This includes the following:

- The nature of the issue
- The current state of the problem
- The potential impact of the problem
- Data analysis

## Cost of failure

Our Opportunity and Risk Assessment summary tool is used to assess the risks associated with a particular risk or initiative. We use this tool to analyse the likelihood of different failure modes occurring, as well as the potential impact of those failures to our customer service. Impacts are monetised to enable an assessment of the risk cost and the value in mitigation.

## Root cause

Bringing together relevant stakeholders who have connection to the asset and its impact on the operations, customers, environment, water quality, regulatory obligations etc. to collectively analyse and agree the root cause of the problem.

## **Solution Optioneering**

Our optioneering identifies alternative solution options to fully or partially mitigate the risks and opportunities. The Whole Life Cost (WLC) and potential solutions are evaluated using techniques including historic cost outputs and our unit cost library, together with our subject matter experts' and supply chain insights.

The WLC is the total cost of owning and operating an asset over its lifetime. It is calculated by adding the initial capital expenditure to the operating expenditure over a time period of typically 25 years, to allow a common basis for assessment.

## **Option evaluation**

Risk reduction scores and the risk index are two important metrics used to evaluate the options for mitigating risks.

The risk reduction quantifies the amount of risk that is removed by a given solution. It is calculated by subtracting the percentage of risk removed by the identified solution from the initial risk identified in the cost of failure section.

The risk index is a measure of the cost effectiveness of a proposed solution. It is calculated by dividing the WLC of the solution by its residual risk. It is used to compare different solutions to see which one is the most cost effective and therefore best value. The best value option is not always the cheapest WLC as the magnitude of risk reduction is a factor in the calculation. Each of our investment business cases propose lowest risk index solution, which is the best value option.

# Governance and challenge

## Overview

We recognise the value that strong governance, challenge, and scrutiny brings to our plan in ensuring ambition and deliverability. Our internal 'Red Teams' have provided challenge for each investment case, with the Board and Independent Challenge Group (ICG) scrutiny of our overall approach and the resultant investment programme.

The Board has been fully engaged in the design and preparation of our Business Plan. The Board has held frequent and regular meetings ensuring that it has strong ownership and accountability for the plan through the provision of strategic direction and instruction to management. The Board's governance and control structure has ensured that Executive Leadership Team and PR24 Programme Board have executed the Board's strategic direction in the development of the Business Plan submission.

Our Business Plan has also been scrutinised by our ICG on material aspects of the plan and what it means for our customers and other stakeholders. Details of the engagement and challenge are in chapter 4 of the Business Plan. In addition, chapter 2 provides our Board assurance statement, where this is discussed in detail.

Our governance structure is shown in Figure 5.

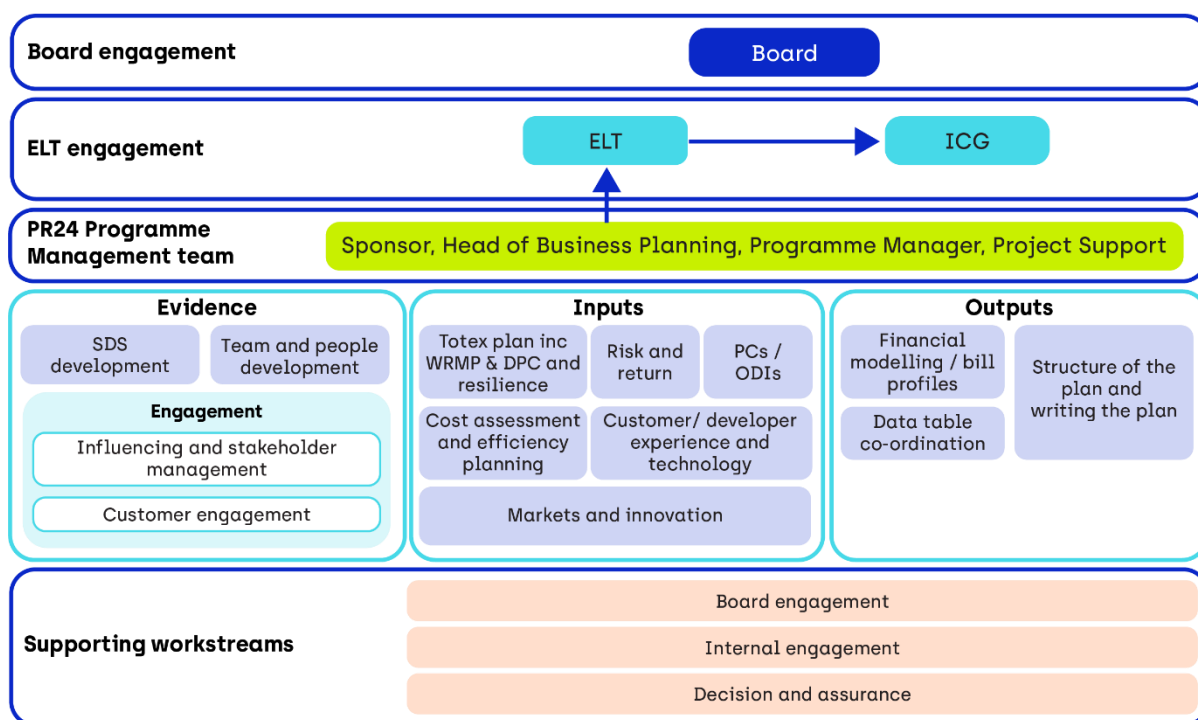


Figure 5: Our governance structure

### Red Teams

Our Red Team sessions brought together experts from across the business with the objective of challenging investment cases to ensure they reflect a suitable level of ambition in cost efficiency and value delivered, and that they meet relevant Ofwat criteria. The Red Team sessions were chaired by members of the Executive Leadership Team, with a minimum of two Directors in attendance.

We undertook three cycles of Red Team challenge sessions, with each investment case presented every cycle. Almost 400 actions were raised during the Red Team sessions, with the number reducing in each cycle as business cases became more mature, reflecting increasing ambition and built with firmer evidence bases.

### Board scrutiny

As an integral feature of our PR24 business plan, the Board has been closely following the development of our investment plan, alongside the longer-term view through our LTDS. The Board has challenged the Executive Leadership Team to increase the maturity in asset management and specifically advocated the use of investment planning tools such as Copperleaf Portfolio to better inform our decision making. As we developed our 2025-2030 business plan, the Board has scrutinised both our investment planning approach and the resultant proposed investment programme. In addition to this direct engagement, Board assurance of our investment planning approach has been undertaken by an external assurance provider.

### Independent Challenge Group

Our Independent Challenge Group (ICG) has also scrutinised our investment planning approach to ensure this reflects the best interests of customers. This included deep dives into how Service Measure Framework benefit valuations were developed, how these were applied in investment planning and how our overall programme was selected.

# Capital Maintenance: Infrastructure

## Summary

Our infrastructure portfolio spans 17,173 km, including 1,925 km of trunk mains and 15,248 km of distribution mains. These assets include pipework, valves, washouts, hydrants, air valves, and service connections. We propose investment of £263.4m for optimised interventions to ensure reliability and resilience across the infrastructure asset estate.

Our capital maintenance activities for infrastructure assets include mains renewals, flushing, network MOTs, pressure management schemes, network reinforcements, meter replacements, leakage detection, surveys, and various other network maintenance and repair tasks. These activities play a crucial role in maintaining the health and reliability of our assets, reducing the risk of interruptions to supply, unplanned outages, Compliance Risk Index (CRI), Event Risk Index (ERI), reducing leakage, and maintaining adequate pressure.

These efforts align with our long-term delivery strategy, ensuring the distribution of wholesome water, preserving asset health, providing a cost-effective service, reducing the risk of discoloured water, minimising burst mains incidents, ensuring uninterrupted supply, accommodating existing and future customers, and maintaining a safe network operation with minimal disruption to the community, including flood prevention and minimising repeat bursts.

Given the diverse nature of our assets, their varying criticalities, and age and condition profiles, prioritising candidates for optimum economic intervention points is essential. This approach ensures that we allocate our botex allowance wisely while maintaining a resilient service.

Table 3 shows a breakdown of cost, followed by an explanation of key areas that support the programme.

Table 3: breakdown of infrastructure costs

Category	Price Base 22/23	Capex AMP8
Infrastructure	Distribution Mains	£34.5m
	Trunk Mains	£25.3m
	Leakage	£55.5m
	M&R	£114.8m
	Network Calming	£17.9m
	Flushing	£5.5m
	Meter Replacement	£2.5m
	Developer Services	£7.5m

Our approach to determining the costs for our infrastructure assets costs can be found in **AFW08 – Our investment development process**, section 2.2.

## Trunk and Distribution Mains Renewals

We plan to invest £34.5m in our distribution mains and £25.3m in our trunk mains in the 2025-2030 period.

We have completed a rigorous exploration of the cost effectiveness of a large range of options across a 25-year timeframe to maintain serviceability and asset health of our below ground assets. We have determined that a combination of mains renewals and network calming represents the best value and most efficient approach to achieving improvements in performance over both the short and long term. We will continue to monitor and assess our network renewal rates throughout 2025-30 and as we develop our longer-term plans for 2030 onwards to ensure an optimal and efficient renewals rate.

We have undertaken significant scenario modelling to understand the optimal rate of mains renewals for the 2025-30 period. While the current Ofwat botex econometric approach indicates an average of 0.4% mains renewal rate, this does not take account of the specific circumstances of individual companies, such as historic mains renewals rates, underlying asset condition, burst rate or the root causes of mains bursts. These factors are critical to determining to optimal rate of renewal over the following 5-year period. For example, we have historically had one of the highest renewal rates across the industry as displayed in Figure 6.<sup>1</sup>

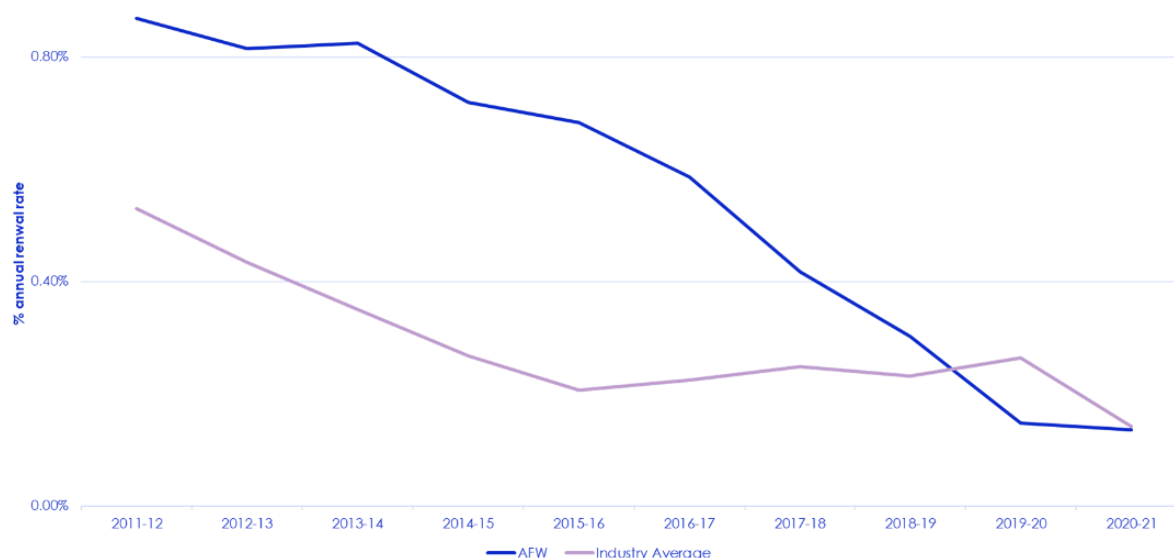


Figure 6: Annual renewal rates from UKWIR database

Our scenario modelling and cost benefit analysis indicates that a 0.4% renewals rate does not deliver the same level of benefit in mains repairs compared to the combined approach of renewals and network calming, which can simultaneously deliver greater benefits in supply interruptions and leakage improvement. Our proposed renewals and network calming programmes result in a burst rate of 2,491 per year by 2030. In contrast, a 0.4% annual renewal strategy would yield 2,511 bursts

<sup>1</sup> Source: UKWIR water industry database



annually but at a significantly higher cost of £113.0 million. This represents an additional expenditure of £46m and results in 20.1 more bursts annually, without the benefits of reduced leakage or supply interruption. Further information of how we modelled our distribution and trunk main investments can be found in **AFW08 – Our investment development process**, section 3.

We intend to replace an average of 24.2km of our trunk and distribution mains (0.14% of our network) per year during the period 2025-2030. This translates to 120.8km (0.71% of our network) of mains renewals across the five-year period. The profile for the delivery of the mains renewals is set to increase each year of the five-year period. This begins at 10% of the total mains renewals (12.1km / 0.07%) in 2025-2026, and increasing by 5% each year, to 30% of the total mains renewals (36.2km / 0.21%) in 2029-2030. This increase is shown in Figure 7.

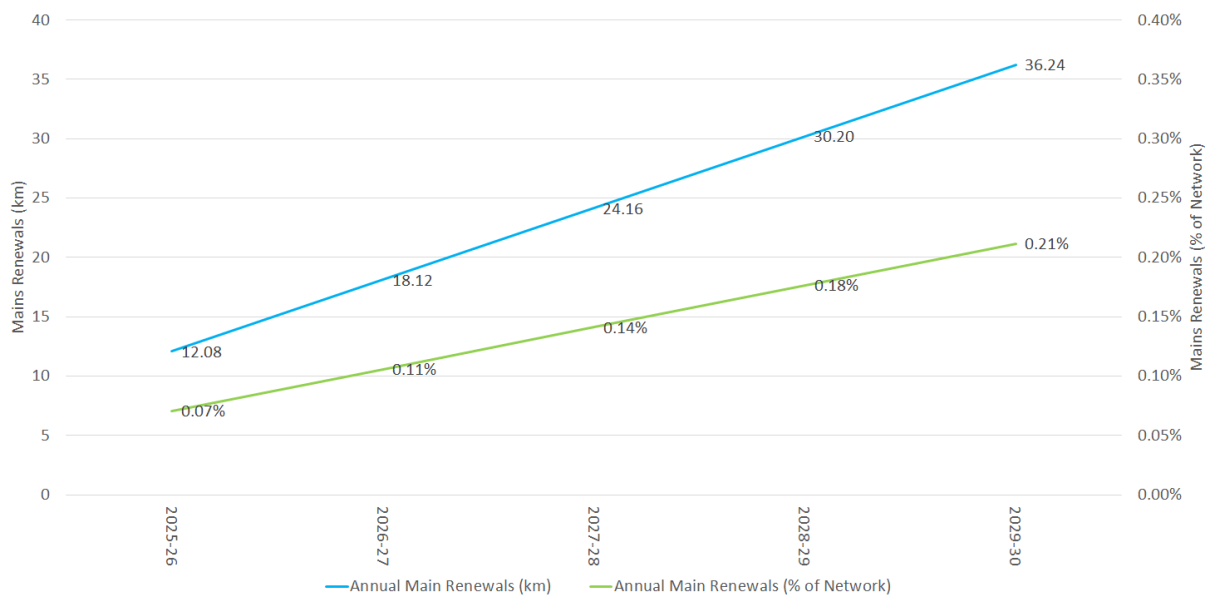


Figure 7: Our mains annual renewal rates in 2025-2030

In 2030-2035, we plan to replace at least 485km of mains (2.8% of our network). This increase in mains renewals, coupled with our above industry average mains renewals in earlier AMPs, is designed to deliver an average of 0.4% mains renewals per annum over a 25-year period.

## Network Calming

Network calming is a proactive approach to analyse and understand the source and cause of pressure transients in water mains. Minimising transients and pressure variations in pipelines contributes to a reduction in bursts and the associated disruption to customers.

Between 2025 and 2030, we are committed to investing £17.6m from our botex allowance in network calming initiatives. These efforts have been carefully designed

together with our network renewals programmes to yield significant benefits by 2030, including a reduction in bursts by 73.4 per annum, a decrease in leakage by 5.3 million litres per day, and a 0.5% reduction in supply interruptions.

This is a best value approach to deliver our performance commitments over the long-term. By investing in network calming techniques first, ahead of renewing mains, we will deliver burst main reduction targets in the most cost-effective manner. While delivering burst reductions with cost in mind, we are also able to ensure benefit towards leakage and supply interruptions, at best value.

Our network calming activities in our botex investment programme include:

- Installing smart valves for all District Metered Areas boundary valves
- Deploying our Watchkeeper programme: permanent trunk main transient monitoring
- Installing new pressure reducing valves and controllers
- Digital integration of our operational and information technology

## Restricted Mains

This programme of works removes sections of main that may present a risk of stagnated water due to restrictions in the distribution network. Continuing our restricted mains programme that started in 2020, we will invest £1.5m in the 2025-2030 period to remove 300 of these sections, reducing the water quality risk.

In 2017, we completed an investigation in response to a taste complaint and a subsequent PAH (Polycyclic Aromatic Hydrocarbons) failure in our Egham Low zone. This incident was caused by the operation of a closed valve on the network.

Following this DWI notifiable water quality incident, we initiated a review of our pipeline assets to identify the number of closed valves, assessing the risks to water quality to prioritise 'at risk' assets and develop specific action plans for to mitigate the risk. The sections of pipes were scored based on length, length of time without operation of the valve and the pipe material. Our full assessment revealed that approximately 2% of our water mains are classified as restricted mains due to closed valves. These restricted mains include roughly 255km of cast iron pipes, with the remaining 64km consisting of other pipe materials.

Following detailed site-specific studies, we initiated a programme of work and established a specialised Distribution, Operation, and Maintenance (DOMS) working group. This group identified a range of mitigation measures to eliminate the risk of future water quality issues stemming from restricted mains. These measures involve either abandoning affected mains or modifying the network configuration to ensure greater flexibility in rezone options to eliminate the risk of stagnated water.

This assessment and action plan were completed in 2019. The process identified a total of 6,790 sections of restricted mains across our operating region, including 805 sections of pipes in the highest risk category. By 2025, we will have resolved 300

sections of mains with the highest risk sections. We intend to resolve a further 300 sections during the 2025-30 period. The resolution of the highest risk sections of mains will include abandonment of sections of mains, relocation of closed valves to generate satisfactory turnover of the water, installation of fittings to create boundary valve flushing points, testing of water in restricted mains to determine the presence or extent of the risk to water quality and rehabilitation of the section removing the cause of the risk. The restricted mains are highlighted in Figure 8.

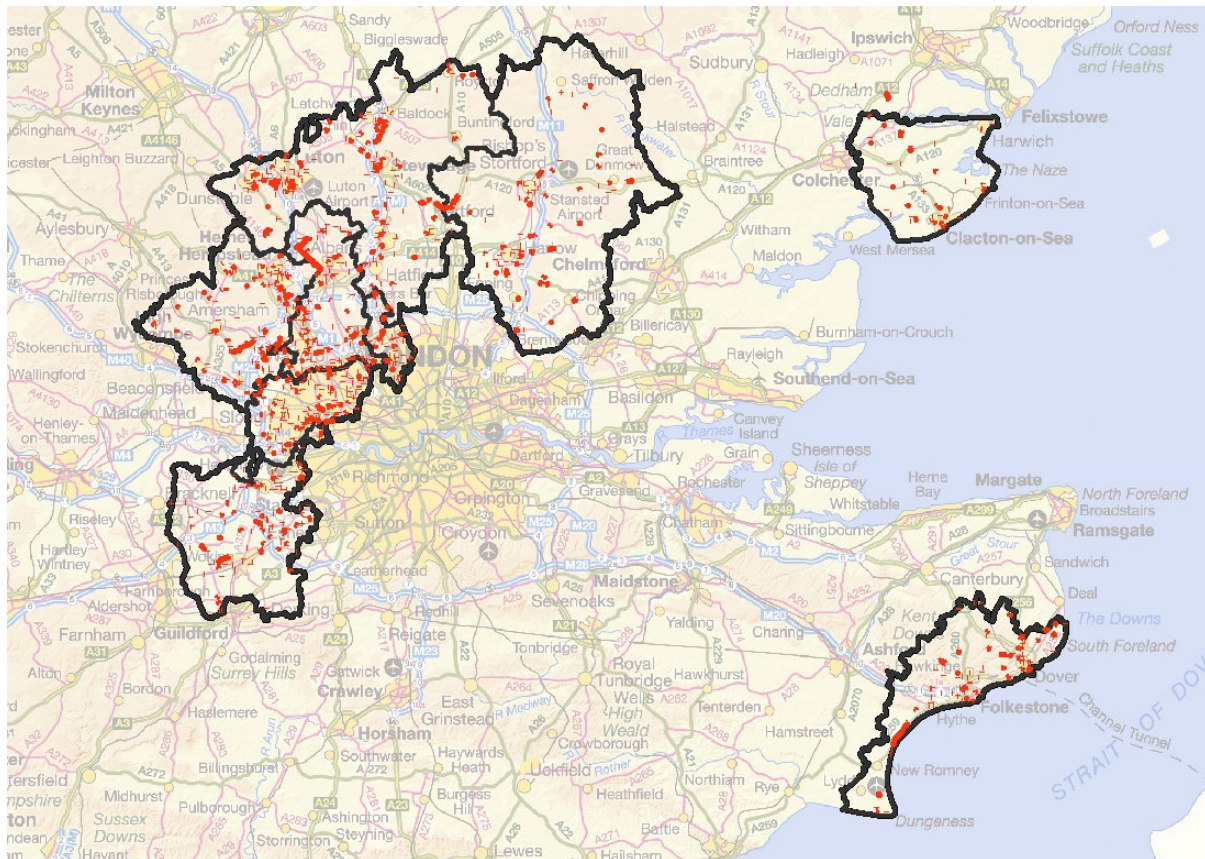


Figure 8: Map of the restricted mains across our operating region

## Aluminium Flushing

Our Drinking Water Safety Plan process identifies water treatment works at risk from aluminium and iron water quality compliance failures due to ineffective or insufficient treatment and management capability.

In our 2015-2020 business plan, we identified that aluminium in our network was an emerging issue and as such we committed to undertaking aluminium flushing in Iver and Egham zones to manage levels in our customers' supply. In 2020-2025, it has been maintained as an ongoing programme. In 2025-2030, we will target the remaining unflushed DMAs in Water Supply Zones (WSZs) affected by high aluminium levels and move to an ongoing programme of flushing in high-risk areas.

The flushing process has been proven to reduce the level of aluminium in the network. A site-specific survey of DMA8825 (Frays River) with sampling from lower velocity flushes both before and after the high velocity flushing process has shown a reduction in aluminium and iron of up to 94%.

Longer-term monitoring has shown that WSZ65, flushed from 2014 to 2016, has reduced from the highest aluminium serviceability score of 7.2 average 2009-2013 to 6.2 average 2012-2016, with only 1 sample >50% of PCV (Prescribed Concentration or Value) despite its proximity to the source.

Compliance Risk Index (CRI), the common performance commitment, captures the scale and duration of a failure, the risk with specific parameter and the outcome of inspectors' assessment of the failure or incident. The flushing for aluminium is to target a reduction in the Zone CRI score and to mitigate the impact of a failure and reduce the likelihood of a failure of aluminium PCV and reduce the potential of contribution to the overall CRI score.

Anticipating reduced aluminium levels due to treatment process improvements, we plan to gradually decrease the necessity for a specific flushing programme over time. We will transition this responsibility to our regular operational team, aligning with DMA flushing practices, to efficiently plan and conduct smaller, localised flushes following specific events.

## DMA Flushing

This programme of DMA flushing aims to reduce the level of deposition in the network with a set of tested flushing plans.

The basic flushing process has been proven to reduce the level of deposition from iron and aluminium in the network as noted in Aluminium Flushing. Our monitoring has shown that our flushing delivered reductions in customer contact from discolouration from 0.5 contacts /1k population over the 2014-2016 range to 0.2 contacts/1k population in 2022. Taste and Odour and Discolouration make up the majority of the customer contacts received. By targeting the known DMAs of highest risk on a yearly basis, the risk of discolouration is reduced in the event of a rezone or by localised disruption.

We will concentrate efforts in high customer contact rate areas and systematically flush distribution mains for improved compliance with the Compliance Risk Index (CRI) and Event Risk Index (ERI). Additionally, this will support our Aesthetic/Taste & Odor Contacts Performance Commitment. This strategy adds value by strengthening resilience to flow changes, thereby offering greater hydraulic flexibility. This, in turn, supports our Interruptions to Supply Performance Commitment, reducing risks linked to rezone options.

Using the data collected under our Distribution Operations Maintenance Strategy (DOMS), we flushed 18 DMAs between 2021 and 2022 with a further six planned by the end of 2023. The benefits help maintain performance in customer aesthetics,

CRI, ERI and network operability. For the 2025-2030 period we plan to continue the current successful approach, targeting the ten highest priority DMAs annually. The DOMS method utilises a red-amber-green risk scoring system where individual WSZs are assessed for the risk of poor aesthetic water quality performance.

Figure 9 shows the proportion of our overall CRI score by asset type, with zonal impact being highest component in 2022. From 2020-2023, we completed flushing in 22 DMAs. We will flush ten DMAs every year from 2025 to 2030.

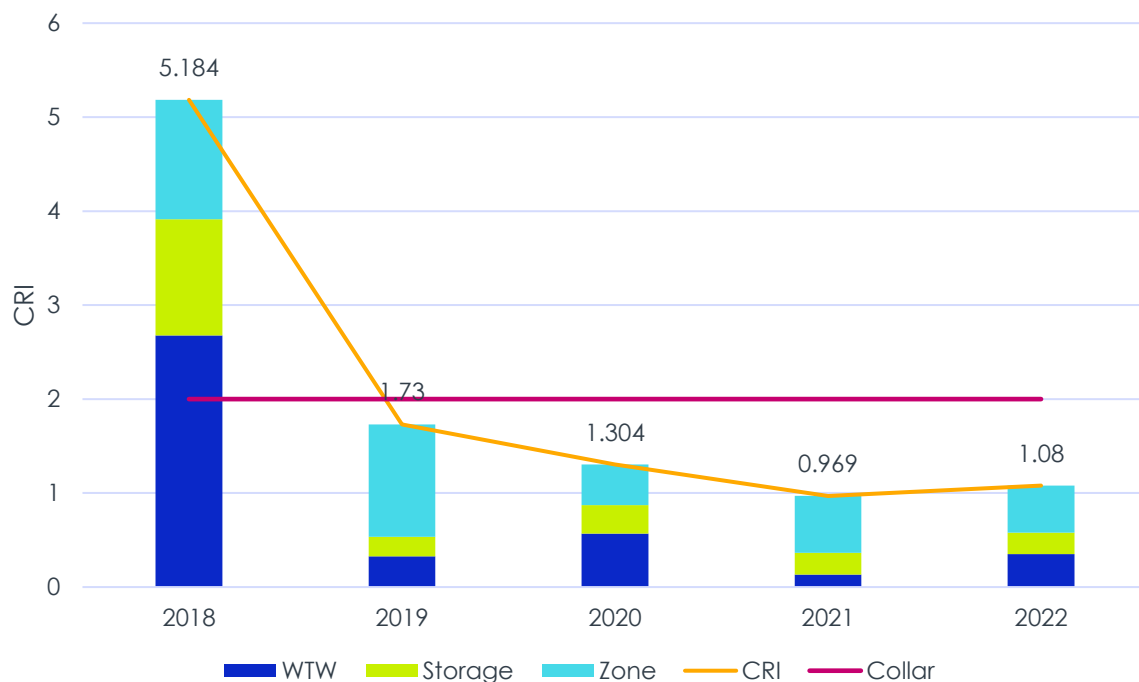


Figure 9: Affinity Water CRI scores 2018-2022

## Developer Services

Developer Services provides service connections to new homes, new water mains on new developments, and facilitates the vesting of new infrastructure with self-lay organisations, as well as providing the supply of water for new appointments and variation customers. These services ensure that every new home, office, and non-household business have access to potable water. **AFW06 – Developer Experience** provides further insight to our scope of work and future plans.

Developer Services investment follows the trend outlined in DS4, and totals £22.7m (gross cost) between 2025 – 2030. This is calculated based on the work expected to be undertaken by ourselves for new connections and new water mains, facilitating self-lay providers, and providing a source of water for new appointment and variations.

Throughout 2025-2030, we will see the evolution of two separate markets each with distinctive characteristics, requirements, and customer needs. For larger developments and those requiring new mains, we anticipate the continued, gradual, reduction in our operational market share, in line with actual changes seen

through the current period and the increase in self-lay providers being awarded up to 8% of new mains work.

We recognise the substantial and positive increase in NAV volumes in our region. Since 2021, the number of properties connected by NAVs has increased by 40%, constituting approximately 9% of the total connected properties. We forecast this percentage will rise further, reaching 13% by the end of 2030. As the NAV market continues to mature, we expect a surge in partnerships between NAVs and self-lay providers. We acknowledge that this shift may lead to self-lay providers becoming our primary customer type by 2030.

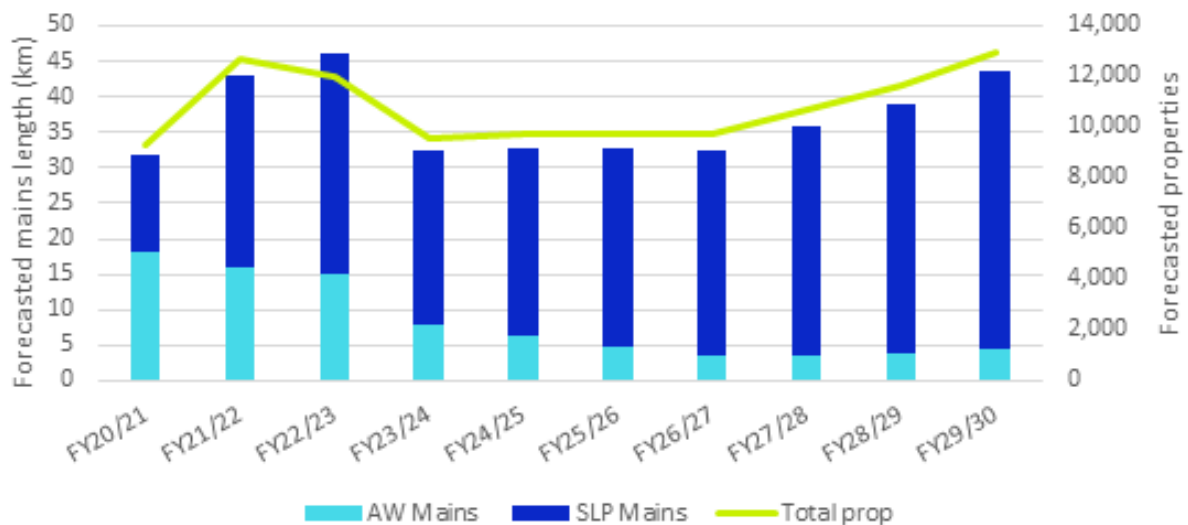


Figure 10: Forecasted mains length laid by Affinity Water and self-lay providers

During 2020-2023, we experienced a decline in growth rates, in part due to factors such as the global Covid-19 pandemic, increases in the Bank of England interest rates, the cost of living crisis and other macro-economic challenges.

We continue to align with economic and market forecasts suggesting the avoidance of a recession and projected growth recovery to begin in 2025. We anticipate slow but steady growth in connection rates moving through 2025 and 2026, with increased acceleration from 2027 onwards.

We have forecasted multiple scenarios for new properties (see below). This included.

- February forecast that used our CRM data
- WRMP data (Edge ONS21), the data used for our WRMP
- APR forecast, a straight median growth forecast
- Draft submission that used APR data with assumptions

The results for the properties trend are shown in Figure 11.

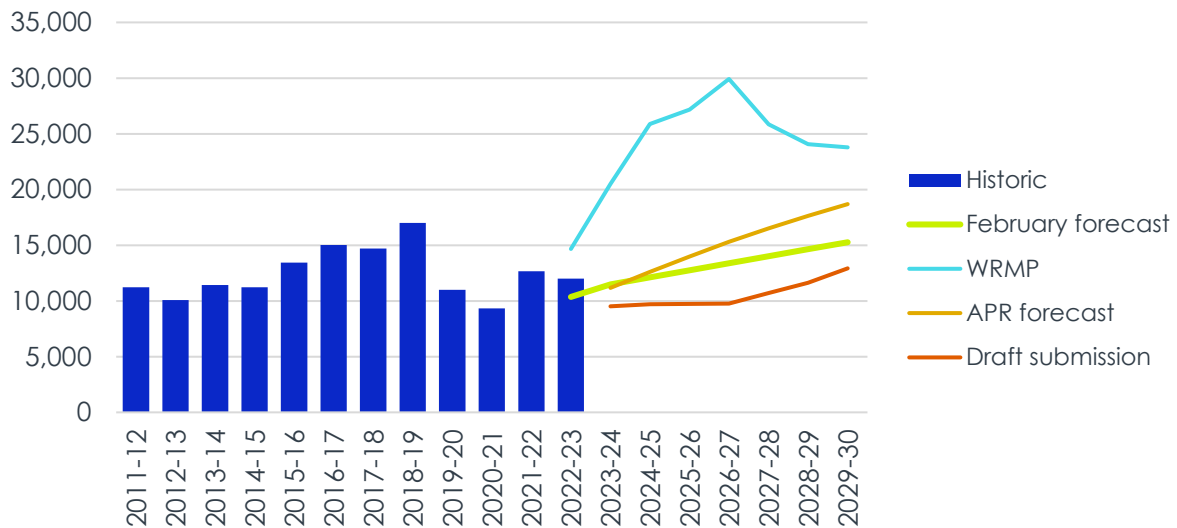


Figure 11: Properties connected and forecast trends

Our plan is based on reported housing completions with additional in-year intelligence on market recovery that reflects a stagnation in the housing market for the next few years with a small recovery from 2027-28. The recovery we have forecasted is in line with the recovery seen following the housing market crash in 2008 and further underpinned by market research expert expectations.

We have planned our network reinforcement programme to mirror the property growth profile outlined above and requires an investment totalling £34.4m (gross costs). The programme reflects efficiencies gained through market insight ensuring just in time delivery of infrastructure. We will further enhance our market insight to drive timely and efficient solutions. While the benefit of water neutrality is currently limited by legislative requirements, they will be evaluated alongside the environmental incentives presented under the proposed new connection charging rules. This shift in new connection charging rules introduces the capability to retrospectively examine the infrastructure requirements while potentially granting a longer window to plan the most advantageous solution.

Our costs for Developer Services in 2025-2030, net of contributions, is £7.5m.

# Capital Maintenance: Non-Infrastructure

## Summary

Our Non-Infrastructure (NI) portfolio consists of almost 78,000 assets, divided into 340 separate asset classes spread across 500 locations. We propose to invest £76m in the delivery of optimised interventions on our NI assets to achieve a reliable and resilient service for our customers.

The capital maintenance activities for these assets contribute to the delivery of multiple performance commitments including interruptions to supply, unplanned outage, CRI, and low pressure. With such a diverse set of assets, with different criticalities and age and condition profiles, prioritising candidates for the optimum economic intervention point is essential to ensure we spend customers money wisely, whilst we maintain a resilient service.

Our storage assets comprise of 188 service reservoirs currently in-service that can hold 1,649Ml of potable and 565Ml of raw water, by 2030, this will increase to 192 service reservoirs, increasing our capacity to 1,720Ml. These assets comprise of contact tanks, raw water storage structures, service reservoirs, treated water tanks and water towers, mostly constructed from reinforced concrete with an average age of 67 years. Over the 2025-30 period, we will invest £31.3m in the inspection, maintenance, repair, and replacement of these assets, protecting customers from risks to water quality and interruptions from supply. We will continue to inspect our storage assets on a risk-based frequency based on criticality and condition data.

Table 4 shows a breakdown of our non-infrastructure base costs, followed by an explanation of key area's that support the programme.

Table 4: non-infrastructure costs

Category	Investment area	Capex AMP8
Non-Infra	Treatment Investment (Capital Maintenance)	£76.6m
	Storage	£31.3m
	Flood Alleviation	£1.0m
	Raw Water Deterioration	£0.6m

The methodology for how the costs are derived for our non-infrastructure capital expenditure is presented in **AFW08 – Our investment decision process**, section 2.3.

## Treatment Investment

With 78,000 assets, comprising long (e.g., reservoirs), medium (e.g., pumps and motor control centres) and short (e.g., instrumentation, control, and automation) asset life ranges, we need to apply asset cohort risk management strategies to preserve



service to our customers. Our planning processes are purposely designed to deliver the best value investment options to maintain that service.

We understand the criticality of our assets and use a mixture of planned and reactive interventions to maintain the supply of high-quality drinking water to our customers. Our planning process drives us to consider a wide range of options, assessing asset health, resilience, and customer service, and select the best value solutions to spend customers' money wisely.

For our 2020-2025 Business Plan, we used PIONEER to model the future investment requirements for the 2020-2025 period, and we have applied the same principles in our PR24 planning. The PIONEER model considers assets' criticality, age, performance (defects), and uses deterioration modelling (Weibull probability distribution) to determine the optimum economical intervention strategy. The tool can recommend both planned and reactive interventions (e.g., run to failure). For certain asset classes, and to better manage operations, we may choose to apply a planned strategy, even where PIONEER may recommend run to failure in the period.

In addition to the PIONEER modelling, we use an asset health model to validate our strategies and further target investments – we call this the Basic Asset Health (BAH) assessment (see Figure 12). We use our IBM Maximo asset inventory to assess individual assets, as well as asset types (e.g., pumps) and asset sub types (e.g., pumps submersible). The formula below sets out our assessment methodology. The result of this process is shown in Figure 13.

$$BAH = \frac{\sum \left( \frac{\text{Effective Age}}{\text{Economic Life}} \times GMEAV \right)}{\sum GMEAV}$$

(GMEAV – Gross Modern Equivalent Asset Value, the cost to replace an asset with the modern equivalent)

Figure 12: Our base asset health calculation

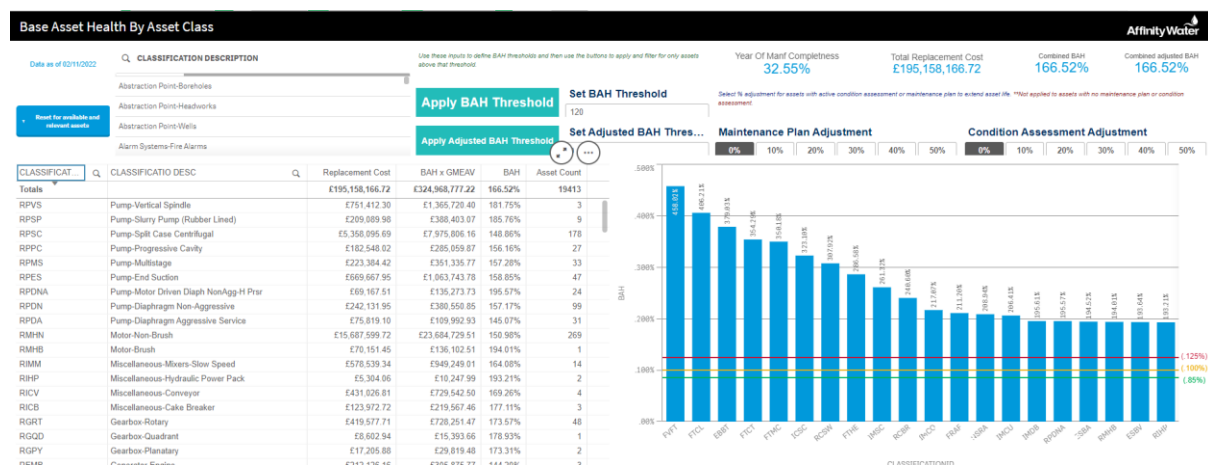


Figure 13: Example dashboard showing our BAH assessment tool

Table 5 provides a BAH ‘view’ of selected primary asset cohorts, giving an indicative view of asset health in key asset groups. This is only a subset (£253m) of the NI asset base (£2.2bn). The table shows total numbers in the cohort, their total cohort replacement value, number of assets at 120% of their asset life (e.g., 20% beyond normally expected replacement age), and the cohort replacement value for those at or beyond 120% BAH. The 20% additional allowance, over the economical (100%), is based on our Asset Care Optimisation process that ensures all assets receive the appropriate maintenance throughout their life, enabling us to apply an additional asset life stretch.

Table 5: BAH view of selected NI asset cohorts

Asset Cohorts	Total no. assets	Total £	>120% BAH	>120% BAH £
<b>Tanks Storage (chemicals)</b>	569	£22m	227	£12.6m
<b>Pumps (not dosing)</b>	1873	£43m	758	£14.9m
<b>Switchgear (HV)</b>	621	£34m	89	£2.4m
<b>Switchgear (MCC &amp; Control panels)</b>	1846	£121m	275	£17.5m
<b>Flowmeters</b>	1544	£5.8m	580	£2.2m
<b>SCADA/PLC and ancillary</b>	2868	£15.5m	718	£5.9m
<b>WQ Instruments</b>	1486	£5.4m	366	£1.4m
<b>Total</b>		<b>246.7m</b>		<b>£56.9m</b>

### Assessment process

- Assets for consideration in our NI botex programme are initially identified for through the PIONEER optimisation tool. This uses asset class deterioration models, asset hierarchy, criticality, and specific asset meta data (age, condition, performance) to identify assets that require further assessment for intervention. This creates a baseline five-year plan for NI assets that is further validated and optimised by the asset planning teams, using a range of assessment and risk management tools.
- Within the five-year investment period, and because we anticipate reactive failures or additional risks to emerge, we operate a dynamic risk management process. This uses our asset risk database (ARM) to prioritise risk by service impact and likelihood. This helps us manage and improve our operational resilience. All emergent candidates are then taken through our R&V process.
- Schemes are managed through our asset lifecycle and governance gateway process and subjected to cost and carbon assessments at each step to ensure we deliver the optimum solutions.

More information on our Investment Decision Making approach is available in **AFW08 – Our investment decision process**.

## Proposed Allocation of Costs for AMP8

The allocation of costs to manage our NI assets is based on PIONEER funding to achieve our ambition and is presented by sub-programme in Table 6.

Table 6: NI investment by sub-programme for 2025-2030

NI sub-programme	Investment
<b>Asset Class Planned Maintenance intervention (major classes)</b>	£44.6m
<b>Reactive intervention for critical asset failures</b>	£20.0m
<b>In Year emergent Asset Risk management (ARM) process and minor classes</b>	£10.0m
<b>Year 1 ARM schemes treatment (completion of projects started in AMP7)</b>	£0.5m

While the class allocation is driven by our PIONEER modelling and BAH assessment, they are further validated and challenged through site surveys, specific asset performance assessments, and subjected to our normal asset planning processes, including R&V.

## Storage

We have a total of 260 storage assets, out of which 188 are in operation. These assets have a combined capacity to hold 1,649 megalitres (MI) of treated water and an additional 565MI of raw water. Looking ahead to 2030, the number of storage operational assets we have will grow to 192, increasing our treated water storage capacity to 1,720MI.

We are committed to inspecting and maintaining our operational storage assets to ensure their continued effectiveness, safe operation, and to safeguard the quality of water in them. Additionally, we hold the responsibility of managing risks associated with 72 decommissioned storage assets that are no longer in operational use.

To fulfil our obligations and optimise the value of our storage asset portfolio, we have outlined an investment plan of £31.3m over the 2025-2030 period. This plan involves inspecting, maintaining, repairing, and improving our storage assets, with the option to replace assets where it proves to be more cost effective.

Legislation, including but not limited to the Water Supply (Water Quality) regulations 2016 and the Reservoirs Act 1975, imposes requirements on water companies. These requirements mandate the proper monitoring and management of storage assets to ensure public safety, compliance with water quality standards, and preparedness for potential emergencies. Furthermore, there is a risk of incurring Compliance Risk Index (CRI) scores and financial penalties if we fail to meet annual compliance standards. Therefore, investment in effectively managing storage assets is essential to align with our long-term delivery strategies and ensure our assets remain resilient for the future.

Our customers support our investment in maintaining our storage assets to ensure the provision of high-quality water, build resilience and prevent supply interruptions. These investments align with our customer's top priorities of reliable water quality, affordable bills, and uninterrupted water supplies, according to our customer insights research carried out in 2022. Securing the long-term sustainability of storage assets not only safeguards water quality, but also mitigates potential public hazards and enhances supply resilience.

Over the next 25 years, our ambition is to ensure the long-term sustainability of our storage assets through proactive inspection, maintenance, and when necessary, replacement plans. We prioritise water quality, resilience-building and environmental stewardship to guarantee a consistent water supply even during challenging conditions. Embracing innovative technologies, complying with regulations, and investing in our storage assets will support our commitment to providing reliable and safe water for our communities' evolving needs.

We have used a comprehensive optioneering assessment procedure to identify an adaptable storage asset management best value solution which will be delivered through established delivery partner expertise and internal stakeholder collaboration.

## Flood Alleviation

We estimate that over 620,000 of our customers (15% of our customer base) are supplied from sites that are at risk of a 1 in 100-year flooding event and 5% of them could experience water supply issues related to flooding, as shown in figure 1 below.

Extreme flooding events are a risk to 27% of our production sites (142 sites) as these sites either are in a river's flood plain, in an area that has a sensitive groundwater level, or where surface drainage systems are unable to deal with intense rainfall. We have 24 production sites that are at risk of more than one type of flooding event, which increases the likelihood of the same site experiencing a flood that may affect water supplies. Table 7 presents the number of sites and the type flooding that they are at risk of.

Table 7: number of sites at risk of flood

Type of flood risk	Groundwater <sup>2</sup>	Fluvial <sup>3</sup>	Pluvial <sup>4</sup>
<b>Number Sites Prone to Flood Risks</b>	15	33	94

<sup>2</sup> Groundwater Flooding – a flood event caused by when the level of water stored underground rises due to prolonged rainfall.

<sup>3</sup> Fluvial Flooding – a river flood event caused by water within a river overflowing its riverbanks onto surrounding land due to extreme rainfall.

<sup>4</sup> Pluvial Flooding – a surface water flood event caused by artificial or natural drainage systems being overwhelmed due to extreme rainfall.

Forecasts by the UK Met Office suggest that climate change will increase the risk of flooding. As average temperatures increase, more water will be held in our atmosphere, through the process of evaporation, and released during rainfall events. Consequently, severe weather events will become more common, and rainfall will be more intense. Increases in average annual precipitation will lead to increased river flows, a rise in ground water levels and more surface water runoff. This makes it more likely that our customers water supplies will be affected as flooding of our production sites becomes more frequent.

Following historic and significant flooding events, we took steps to reduce the risk of supply interruptions resulting from flooding. We therefore undertook a flood risk assessment to identify assets at risk of flooding and carried out flood resilience works across several of our flood risk sites to enhance the protection and reliability of critical assets, reducing the likelihood of supply interruption during flood events.

The base element of our flood resilience programme aims to invest in flood maintenance activities across our production sites. Our enhancement activities, separate from base plan (cost), aim to address emerging flood related supply risks influenced by climate change, abstraction reductions and our Water Resources Management Plan (WRMP).

We have an obligation to fulfil flood management requirements placed on us under Water Industry Strategic Environmental Requirements (WISER), the Flood and Water Management Act 2010 and the Water Resources Act 1991.

To meet our planned business outcomes, it is necessary that we invest in flood resilience measures to safeguard our customers water supplies from the short-, medium- and long-term impacts of flooding.

Table 8 provides an overview of cost allocation for both base and enhancement expenditures over the period 2025 to 2050.

Table 8: cost allocation of base and enhancement expenditure to manage flood risk

	AMP8	AMP9	AMP10	AMP11	AMP12
<b>Enhancement</b>	£1.1m	£10.4m	£1.1m	£-	£-
<b>Base</b>	£1.0m	£1.6m	£2.0m	£2.5m	£3.0m
<b>Total</b>	£2.1m	£12.1m	£3.0m	£2.5m	£3.0m

# Totex Investments

## Summary

Whilst many of our activities can be clearly delineated between capex and opex investments, we manage many of our key functions on a totex basis, removing constraints in how we invest and enabling best value decision making.

In the following sections, we detail the opex and capex costs associated with these functions and how these will support delivery of key outcomes for our customers.

We present an overview of the capex and opex investments for each investment area in Table 9.

Table 9: totex investment programmes

Investment area	Capex	Opex	Totex
Leakage	£69.3m	£24.7m	£94.0m
Water Network Repair and Maintenance (M&R)	£114.8m	£192.0m	£306.8m
Information Technology	£19.9m	£73.0m	£92.8m
Fleet	£1.0m	£25.5m	£26.5m
Labs	£2.8m	£22.5m	£25.3m
Land & Estates	£9.0m	£19.5m	£28.5m
Business Planning	-	-	£15.0m
Investment Planning	-	-	£5.8m

## Leakage

The overall investment for leakage is shown in Table 10.

Table 10: leakage investments

Investment area	Capex	Opex	Totex
Leakage	£69.3m	£24.7m	£94.0m

We are committed to delivering a 50% reduction in leakage by 2050, in line with the National Infrastructure Commission recommendations. By the end of AMP7, we will have delivered a 20% leakage reduction from the 2019-2020 (three-year rolling average). We have invested extensively in delivering this performance from our 2020-2025 base cost allowance.

Our ambition is to reduce leakage by a further 11% during 2025-2030 (3yr rolling average from 2019-20 baseline). This will mean that by 2030, we will have delivered nearly two-thirds of the 50% reduction in a third of the time. Table 11 shows how this 11% will be delivered across our base and enhancement programmes.

Table 11: 2025-2030 leakage reduction totals by programme

Business area	Scheme	% of 11% leakage reduction	Total reduction % delivered
Base	ALC	32	3.52
Base	Network calming	24	2.64
Base	CSL	21	2.31
Enhancement	Smart metering	8	0.88
Enhancement	Network calming	15	1.65

We plan to invest £94m<sup>5</sup> of base totex between 2025-2030 in delivering 77% of the 11% leakage reduction. The remaining 23% will be funded through the network calming and smart metering enhancement programmes.

In line with industry best practice, we adopted the PALM (Prevent - Aware - Locate - Mend) Leakage Management Framework. Table 12 sets out the leakage base costs by PALM and by capital and operating expenditure.

Table 12: our 2025-2030 leakage base costs under the PALM leakage management framework

2025-2030 costs	Capital expenditure (£000s)	Operating expenditure (£000s)	Total (£000s)
Prevention	23.6	-	23.6
Awareness	17.0	2.6	19.5
Locate	28.6	16.3	44.9
Mend	0.2	5.8	6.0
<b>Total</b>	<b>69.3</b>	<b>24.7</b>	<b>94.0</b>

## Water Network Maintenance & Repair

An overview for our Network Maintenance and Repair is shown in Table 13.

Table 13: our investment in Network Maintenance and Repair

Investment	Capex	Opex	Totex
<b>Repair and Maintenance (M&amp;R)</b>	£114.8m	£192.0m	£306.8m

<sup>5</sup> This is a subset of total costs shown in data table CW19. The costs here exclude costs set out in other sections of this and the enhancement costs appendices. These include Mains renewals, leak repairs, Indirect costs and enhancement spend on network calming and smart metering related to leakage management.

Note that £14.6m is associated with our network calming strategy that is directly associated with leakage reduction benefit.

Maintenance and Repair (M&R) activity is a significant part of our overall base expenditure and is key to delivering the majority of our performance commitments. As we drive for further improvements in key measures such as leakage and supply interruptions, we will increase the number of inspections of our network and the number of opex repairs and capex replacements we undertake.

Most of our M&R expenditure will be operational expenditure, focusing on repairing our network where our assets are no longer performing as they should, supporting our reduction in leakage, supply interruptions and low pressure. These activities include repairs to our water mains and ancillaries such as valves and hydrants with associated planning and traffic management. We have forecast the number of jobs we will need to undertake based on our performance ambitions and asset data, translating these into costs using existing contract rates and market data.

We also plan to deliver £114.8m of capital investment to achieve benefits across the following workstreams:

- Replacement & Installation of Stop Taps
- Replacement & installation of Communication Pipes
- Replacement & Installation of Supply Pipes
- Replacement & installations of Other Fittings
- Replacement & installation of Other Fittings (Network MOT)

The benefits we realise through the delivery of our M&R programme are central to maintaining our below ground assets and enabling the resilience of our network through replacements and installations of new assets. We identify where assets have failed and/or where new assets are required by active leakage detection or customer generated work, such as leakage reports or defective stop taps.

The M&R workstream is driven from routine leakage detection, undertaken by the leakage detection teams, telemetry and/or alarms, customer contacts and proactive Network MOT surveys. This generates work for our M&R teams to undertake either resulting in repairs, replacements, or the installation of new assets to enhance the resilience of our network.

All work is recorded in our works management system, Maximo, from investigation through to completion. We also use a proprietary Situational Awareness tool, which helps identify issues before a customer contact is received by means of alarms and loggers which feed into our control room. Whilst still being reactive works, the intention is to identify an issue before its reported, improving overall service levels and our customers' experience.

Network MOTs will be carried out in AMP8. This involves a proactive survey of our district metered areas (DMA's). We survey all assets in that DMA, shut off valves, hydrants, air valves, wash outs. The survey includes checking location, its operability and whether our GIS systems are up to date. Any defective items such as broken valves will be raised for replacement. We forecast to complete 5,265 jobs in the 2025-2030 period driven by Network MOTs in a significant move to more proactive care for our water network assets. We have reviewed trial data and calculated a conversion rate for work order creation. The intention is to survey all our 1,100 DMAs



twice during the 2025-30 period, however on the second wave of surveys we anticipate a decrease of 75% in work order creation conversion rate as most issues will be picked up during the first survey. We are targeting 18 seconds improvement to our supply interruption performance from our Network MOT activity. This will equate to 30% of our targeted reduction in interruptions to supply over the 2025-2030 period.

We forecast that we will complete over 150,000 individual jobs of work during the 2025-2030 period, based on a weighted average of the work volumes we are experiencing over this current period.

## Information Technology

An overview of our information technology investment is shown in Table 14.

Table 14: overview of our information technology investment

Price Base 22/23	Capex	Opex	Totex
<b>Information Technology</b>	£19.9m	£73.0m	£92.8m

Technology is a key enabler and is ubiquitous in our operational capabilities to achieve the ambitious commitments for our customers and the environment. We must invest in technology and work smarter. Without sufficient investment in technology, we will not be able to meet the challenges faced and become a more resilient organisation to better meet customer needs and expectations.

We propose investing £92.8m in technology for the period 2025-2030. This allows us to deliver our ambition of a consistent, stable, and secure information technology (IT) environment for continued business operations. The aim of the baseline investment is to reduce the number of service failures and impact on the different functions of the business and subsequently external customers. The requirement for End User Computing is based on analysis of IT assets against their respective deterioration models. We then apply each asset's care criteria to ensure the delivery of an appropriate IT service against the cost of change. Our base totex IT programme has been developed to provide the right level of investment to support the four key maintenance criteria of technical obsolescence, security, safety, and customer satisfaction.

Our asset base has changed over 2020-2025. For example, the number of laptops has increased by c.500 assets due to changes in working from home during the Covid-19 pandemic. Additionally, the demand for increased screen real-estate via the use of dual monitors has seen the number of monitors increase by c. 300, again increasing the asset base.

Another factor in the increase in our cost base is due to IT security. Data breach risks or exposure to cyber criminals are more prevalent now. With the proliferation of assets, it provides new opportunities for criminals to attack. To counter this constant

threat, we have deployed new security solutions. This is critical to ensure the integrity and safety of the working environment, but it has necessitated investments to maintain these solutions whilst also delivering new ways to protect the business.

The breakdown of our IT investment by asset group is shown in Table 15.

Table 15: breakdown of our IT Investment

IT Asset Group	Capex	Opex	Totex
<b>End User Computing</b>	5.3	4.3	9.6
<b>Applications (Business)</b>	2.1	7.7	9.8
<b>Applications (Non-Business)</b>	5.3	45.4	50.7
<b>Data</b>	0.1	2.0	2.1
<b>Infrastructure (99% cloud based)</b>	0.2	9.4	9.6
<b>Networks</b>	2.3	3.9	6.1
<b>Change</b>	4.6	0.3	4.9

Applications are at the heart of our business operations, and this is reflected in that the asset group accounts for the majority of the IT baseline investment. The application asset group covers:

- Business applications: Helping manage and run the non-IT aspects of the business. This includes applications managed outside of IT budgets as well as those managed inside.
- Core applications: Applications provided to all our user base e.g., Microsoft Office.
- Infrastructure applications: Service and development applications, used to manage the complete IT value chain lifecycle.
- Security applications: Used to maintain and secure our technology environment from all threats.

## Fleet

An overview of our fleet investment is shown in Table 16.

Table 16: overview of our fleet Investment

Investment	Capex	Opex	Totex
<b>Fleet</b>	£1.0m	£25.5m	£26.5m

Our Fleet investment plan includes the operation, maintenance, and replacement of all vehicles, including our liveried fleet and large operational plant. We plan to lease 99% of our vehicles as this represents best value, resulting in most costs being opex, however a small number of HGV vehicles and operational plant is procured and owned as these tend to be retained for longer periods than normal leasing agreement dictate, so is more cost beneficial to own over the lifetime of the asset. The number of vehicles we will use during the 2025-30 period has been forecast based on resource requirements across our key functions.

Our strategy is to transition our leased fleet of cars and vans to an EV fleet early in the 2025-30 period. The additional costs of transitioning to an EV fleet vs the existing internal combustion engine (ICE) fleet is included in our Net Zero enhancement case document in appendix **AFW14 – Enhancement investment cases**. The base opex costs therefore include the costs of running our leased fleet as ICE vehicles, with the enhancement costs covering the additional costs.

Our capex cost for the 2025-2030 period is £1.0m. This will allow us to replace our owned vehicles and plant equipment that have come to the end of their serviceable and safe life, as well the maintenance of existing plant. We will seek to transition these larger vehicles to low carbon alternatives beyond the 2030 period, adopting biodiesel, EV, or Hydrogen technologies dependent upon the best value option as these mature.

## Lab Equipment

An overview of our lab equipment investment is shown in Table 17.

Table 17: overview of our lab equipment investment

Price Base 22/23	Capex	Opex	Totex
Laboratory	£2.8m	£22.5m	£25.3m

We have completed a thorough optioneering of the cost effectiveness of continuing to provide the required regulatory and operational water quality testing requirements using our in-house laboratory. We have compared the current testing scope, service level and response requirements of the business to the rates available in the commercial laboratory market and taken account of the risks inherent in subcontracting this vital, fast response service. Our analysis shows that delivery of this service in house continues to provide the best value and most efficient approach to undertake water quality analysis to comply with regulatory requirements and to inform operational decisions. Our in-house laboratory provides a faster response than third-party services for lower costs, including the provision of a 24-hour service.

Specialist subcontractors are used for approximately 5% of testing where the small scope of work does not make it economical to provide this service in-house and we will continue to monitor the cost effectiveness of all laboratory operations.

In order to continue to deliver the in-house testing service, we have undertaken a long-term risk-based approach for the replacement of all significant items of laboratory equipment. Replacement timing is based on the ease of replacement and impact of failure assessments for each item. Replacement times and costs for individual items of equipment range from two weeks and £5,000 for smaller items, to eight months and £300k for the most complex instruments. We will invest £2.8m (capex) in the 2025-2030 period to maintain our laboratory assets, replacing when they become ineffective or are end-of-life, to provide a continuous sampling and testing service.

## Land and Estates

An overview of our land and estates investment is shown in Table 18.

Table 18: overview of our land and estates investment

Price Base 22/23	Capex	Opex	Totex
Land and Estates	£9.0m	£19.5m	£28.5m

We have a diverse property portfolio distributed across more than 630 sites. Our estate is predominately operational, with 84% of our sites and assets directly associated with the resources, transport, storage, treatment, and distribution of high-quality water to our customers. We plan to invest £28.5m in the 2025-2030 period.

Our Land and Estates plan includes three components:

- Facilities Management and Building and Estates Maintenance
- Physical Security
- Land and Estate Management

The primary function of facilities management estates maintenance is to manage the property portfolio, including land holdings, buildings, structures, and non-operational infrastructure, maintaining operational integrity and asset value effectively. It also covers our 22 manned offices, providing tools and services that support the functionality, safety, and sustainability of buildings, grounds, infrastructure, and real estate.

Core activities include the delivery of planned preventative maintenance services to critical support services and repair or replacement of failed property assets. The team also delivers projects that affect building fabric, rationalisation of the estate, security and facilities, and improvement of workspace in support of organisational change and performance efficiencies.

Our proposed investment programme for 2025-2030 enables:

- Critical repairs and minor works to maintain asset integrity;
- The replacement following significant failure of critical property assets that are confirmed as beyond economical repair;
- The delivery of systems and/or equipment that will mitigate significant risk, realise reductions in operating costs or deliver compliance following changes in legislation or policy;
- Provision of essential changes to existing infrastructure in support of critical organisational change;
- The repair of existing physical security equipment and assets that maintain site security, access, and egress;
- The replacement of existing physical security equipment and assets that are confirmed as beyond economical repair or pose an unacceptable risk due to extent of physical damage, replacement part obsolescence or software versions no longer being supported.

We have conducted a baseline assessment of property condition and physical security requirements to identify where maintenance and improvement work is required during 2025-2030. The costs have been validated on the basis of work completed in the 2020-2025 period and with our framework suppliers. The costs have been projected across the portfolio to identify total investment over a 10-year period.

We will proactively programme necessary replacements and repairs over the next five years and, where new technologies present opportunities, invest in self-funding enhancements across the estate. This allows us to target the best value option.

## Business Planning

An overview of our business planning investment is shown in Table 19.

Table 19: overview of our business planning investment

Price Base 22/23	Capex	Opex	Totex
<b>Business Planning</b>	£15m	-	£15m

We will invest £15.0m to deliver our regulatory and statutory plans in 2025-2030, including our Business Plan, our WRMP, and our Drought Management Plan and the associated in-period updates. It also includes our ongoing contribution to the regional water resources planning groups, notably Water Resources in the South East and Water Resources East.

We forecast an increase in expenditure in 2025-2030 compared to 2020-2025 to meet increasing requirements for more sophisticated planning and modelling. This continues the trend we have seen for incurring higher costs in each five-year period to prepare our regulatory and statutory plans that provide high quality evidence and longer-term forecasts of water availability and need.

## Investment Planning

An overview of our investment planning investment is shown in Table 20.

Table 20: overview of our investment planning investment

Price Base 22/23	Capex	Opex	Totex
<b>Investment Planning</b>	£5.8m	-	£5.8m

We will invest £5.8m in our activities that support the development of our investment programmes and maturing our asset management system and processes.

This includes licencing of our Copperleaf Portfolio decision support tool. We implemented Copperleaf in 2021, after engaging the market to explore options to

further improve our investment decision making capability. Copperleaf provides a mechanism to value risks and benefits of investment options in a 'common currency', allowing us to make best value decisions for customers and the environment. We are continuing to develop our capability to value the six capitals and plan to integrate that into our future decision making.

The majority of our investment in this area maintains our modelling and insight capabilities, including graphical information systems, hydraulic modelling, and our asset condition laboratory. We also provide the governance of our R&V process (see Risk and Value process) and oversight of our asset management maturity programme under this area.

Over the course of the last 18 months, we have delivered an improvement in our asset management maturity through an Asset Management Transformation Programme (AMTP). This ensures we have the systems and processes in place to make good decisions for our customers and shareholders. This AMTP was based on Ofwat's Asset Management Maturity Assessment (AMMA) recommendations, coupled with the outcomes following our own self-assessment against the Institution of Asset Management 39 subjects / ISO55001:2018 standard. Our transformation programme comprised 37 initiatives, grouped under 12 overarching workstreams. These covered the full spectrum of our asset management approach, from our asset management system to our strategy, planning, decision making, information management, risk management, and people competency and training.

## Base operating expenditure

### Summary

Our base operating expenditure (opex) totals £904m for the period 2025-2030 (excluding renewals), increased from £790m (Final Determination 2020-2025, 2022/23 prices).

Our opex portfolio covers the costs of abstracting, treating, and supplying water to our customers, as well as a series of interventions to deliver our performance commitments and the costs to support the running of our business. We also include an allowance of £2.8m in respect of the costs of issuing new equity to support our investment portfolio.

The opex portfolio by nature of cost is shown in Figure 14.

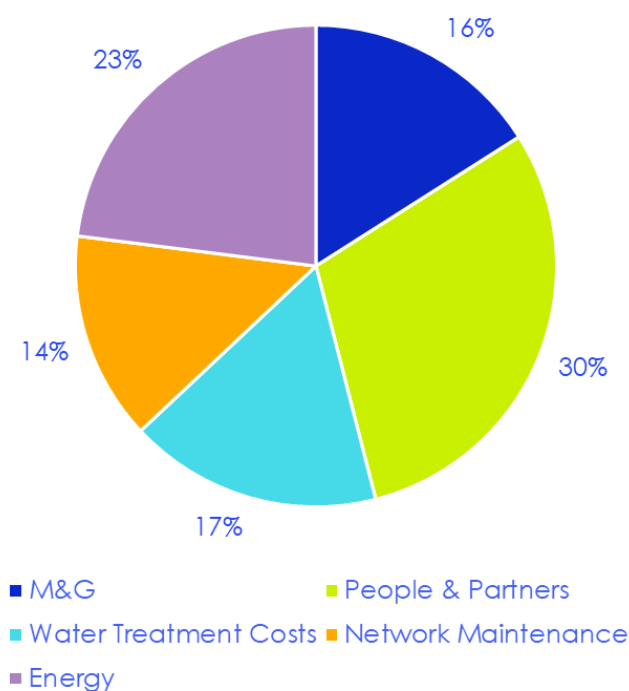


Figure 14: our opex portfolio by nature of cost:

## Securing Cost Efficiency

Our operating costs, both actual and forecast, are subject to a process of continuous scrutiny and review. Our forecasts are prepared at a detailed, line-by-line and employee-by-employee level. They are subject to regular scrutiny by our Executive Team and are approved twice annually at Board level. This forecasting methodology forms the basis of our forecast operating costs for the period 2025-2030.

We seek to continuously improve our model in order to deliver performance for our customers. During the 2020-2025 period, we have been able to rapidly move resources where needed, for example onto the delivery of leakage improvements. We have also undergone organisational improvements to align our delivery teams to provide a true source-to-tap view of our operations, delivering improved performance on our commitments and cost efficiencies.

Operating performance and expenditure are reviewed monthly by our CEO, CFO and Executive Team. We tightly control spending through a Board approved system of spend limits and procurement rules, and have developed a culture of frugal, intelligent use of funds. These processes are reviewed regularly by our Internal Audit team.

During the 2020-2025 period, we successfully mitigated most of the impact of higher inflation on our business. We control our opex through a continuous process of operating model refinement, external benchmarking of input costs, including salaries, and through challenge and scrutiny at all levels of our business, including by our Board.

We developed our plan on a 'top-down' and 'bottom-up' basis, using internally generated benchmarking of our position in the sector as a reference point to set a stretching commitment to further reduce our costs both before and during the 2025-2030 period. We use an up-to-date view of key input prices, including salaries and subcontract costs, and electricity to provide a forecast of the efficient costs to run our business.

Our operating expenditure portfolio for 2025-2030 is built on a forecast of the performance of our business, as adapted for key changes as follows:

- Energy price and utilisation
- Costs associated with Performance Commitment Plans
- Efficient additional costs required to deliver our business plan during 2025-2030 as a result of capital investment plans

To achieve our package of performance commitments, we propose opex investments targeted at developing our people's skills and capabilities. For example, we plan to invest in further 'multi-skill' training for our network operatives, allowing our network MOT and calming programmes to be carried out more effectively, delivering the maximum possible benefit from these investments.



Additions proposed to our cost base in 2025-2030 have been subject to a rigorous review and challenge process as part of the development of our botex plan. Plans related to performance commitments have been triangulated against customer research, forecast ODI rates, and our range of internal economic assessment tools. For example, in the 2025-2030 period we propose an additional opex investment targeted at delivering our commitments and ambitions to be Net Zero by 2030. We developed a range of possible Net Zero options and possible investments and likely benefits under a range of scenarios, which went through the same governance processes as proposed investments in our physical assets.

We have imposed a top-down efficiency challenge to our plan of £40m (in 2022/23 prices). This equates to a 6% efficiency to the portfolio (excluding the price of energy). These efficiencies will be delivered through further detailed reviews of our operating model, people, and maintenance costs.

## People & Partners

### Overview

Affinity Water is a community of 1,460 people committed to delivering high quality drinking water to our customers every day. Our people take huge pride in delivering a vital service. People and partner costs are our largest single expense, representing circa 30% of our forecast totex costs for the coming 2025-2030 period, with direct people costs making up 30% of our forecast opex.

### Our people

During 2020-2025, we embraced the opportunity to develop a hybrid workforce, driven by the Covid-19 pandemic in 2020. We invested in remote working technology and office redesign to support our people in continuing to deliver for our customers, both during the pandemic and afterwards. As a traditionally regional sector, the move to hybrid working has allowed us to access a wider pool of talent, with more of our people based outside of our local area than previously.

In an environment where external talent is becoming harder to attract, we believe that investment in our people is vital to our resilience and future success. During 2020-2025, we have redeveloped our learning and development team and driven efficiencies totalling £5m through a company-wide programme of business excellence, with 180 colleagues trained in Lean Six Sigma techniques. During 2020-2025, we restarted our graduate scheme, welcoming eight new members to our company in the first two years.

We undertake a continuous process of benchmarking salaries and benefits against the market, allowing us to ensure that external hires join with a competitive package. Role requirements and costs are tightly governed through our budgeting process and are subject to sign off at Executive Team level.

We have focused on progression in our business and modernised our approach to recruitment, reducing our average cost to hire. These approaches will support our

ability to efficiently deliver our investment programme and performance commitment package in 2025-2030. We will continue to invest in training and development focussed on delivery of performance commitments and excellent service to our customers, as well as wider people development. We are pleased that a majority of roles in our business are now being filled by internal applicants, illustrating the success of our approach to people and our culture.

We have developed our operating model to set us up to deliver in the most effective and efficient way for our customers. We align our people to deliver the best customer journeys, with our operations covering source to tap, and to ensure delivery across our suite of performance commitments.

### Our partners

In addition to our people, our supply chain partners form a vital part of our delivery to our customers. We work on a true partnership basis with our supply chain, sharing learning and best practice, particularly in relation to health and safety.

We regularly review our model to ensure that the best placed and most effective resource completes work for us, whether a directly employed person or a third party contractor or consultant, while ensuring that experience and learning remains within our business. For example, during the 2020-25 period, we chose to insource elements of our demand management delivery and made a significant saving.

We have secured efficiencies through a balance of direct delivery and subcontractors in the delivery of maintenance and leakage repair activities. We are investing over £1m in aligning and upgrading our planning and control functions during the final two years of the 2020-2025 period to improve customer journeys and prepare us for the next five-year period.

We have already commenced engagement with our supply chain in respect of the 2025-2030 period. Please see the Delivery chapter and appendix AFW32 for more information.

### Overheads

£41.3m of our people costs are capitalised as overheads to our base capital programme. Overheads in our capital programmes comprise direct charges for staff in our Asset Planning and Insight teams, whose time is spread across our full investment portfolio. We also include costs in respect of the governance and programme management of our portfolio against this line. These costs, which are entirely people related, are subject to review and scrutiny using the same processes as we use for other people costs and operating expenditure as detailed in 'Operating Expenditure: Securing Cost Efficiency' below.

We also transfer a proportion (approximately 40%) of our corporate costs as an 'indirect' capital overhead. These costs, which represent the support given to the capital programme by our Finance, HR, Commercial, Procurement and Leadership functions are charged based on a model developed internally with support from Deloitte. This model is subject to annual assurance as part of our statutory and regulatory reporting.

# Energy

## Overview

The cost of electricity to treat and distribute water across our network to customers represents 14% of forecast base totex costs for the period 2025-2030, and 22% of our forecast Operating Expenditure for this period. Table 21 shows how our costs have evolved since 2020, broken into wholesale and grid costs.

Table 21: evolution of our wholesale and grids costs

Financial Yr Ending	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Total Energy £m</b>	23.5	26.7	35.6	40.4	50.8	54.8	43.0	40.9	37.8	37.3	36.1
<b>Grid £m</b>	15.7	15.1	16.2	16.7	18.2	19.2	16.4	17.0	15.7	15.6	14.6
<b>Grid %</b>	67%	57%	46%	41%	36%	35%	38%	42%	42%	42%	40%
<b>Wholesale £m</b>	7.8	11.6	19.4	23.7	32.6	35.6	26.6	23.9	22.1	21.7	21.5
<b>Wholesale %</b>	33%	43%	54%	59%	64%	65%	62%	58%	58%	58%	60%

For the 2025-2030 period, we forecast the wholesale price of energy to settle downwards from the highs experienced in 2022/23 & 2023/24, but to remain significantly above the long-term average. Our forecast is based on prices directly from the market, and benchmarking undertaken for the sector by Cornwall Insight, a leading energy market consultancy. This is shown in Table 22.

Table 22: wholesale price of energy forecast

Period (Financial years)	£/MW/h (Wholesale)
<b>2011-2015 (average)</b>	51.8
<b>2016-2020 (average)</b>	40.7
<b>2021</b>	52.5
<b>2022</b>	77.1
<b>2023 (estimate)</b>	95.0
<b>2024 (estimate)</b>	122.1
<b>2025/26 (forecast)</b>	138.4
<b>2026/27 (forecast)</b>	127.9
<b>2027/28 (forecast)</b>	118.6
<b>2028/29 (forecast)</b>	114.8
<b>2029/30 (forecast)</b>	114.8

We have mitigated the impact of these increases on our business and customers with an ambitious Energy Strategy across three pillars:

1. Reduce Consumption through Efficiency
2. Develop Self Generation capacity
3. Manage residual risk via intelligent purchasing

This strategy will continue in 2025-2030, and we target a further reduction in our energy consumption of 10% in both the 2025-2030 and 2030-2035 periods. This strategy is an important part of delivering both best value for our customers and our commitment to achieving Net Zero by 2030, saving 3.5 tonnes of carbon in 2025-2030.

### Reducing Consumption through Efficiency

We plan to reduce our current energy consumption and associated carbon by at least 10% by the end of 2030, which will be achieved through:

- Optimisation of assets, processes, sites, and communities, providing real terms reduction in energy intensity.
- Targeted capital investment to refurbish and/or replace inefficient pumps and other significant energy consuming assets, redesign and implementation of more efficient pumping systems and increased monitoring of asset performance.

The strategic options for asset optimisation and intervention have been split into separate areas. We have considered each intervention type independently in order to drive the optimal investment package.

### Testing and Monitoring

We will develop a standard template to be used for energy surveys of the highest consuming sites. Surveys will create a baseline of performance with an annual review cycle to review improvements and opportunities.

Our existing Pump toolkits will be used to review daily pump performance and deviations from efficiency which can be quickly rectified. A data driven approach will identify long term trends of poor performance to either make operational changes or to inform capital investment projects.

We will implement a programme of thermodynamic testing of our larger pumps to review pump performance and compare with normal operating parameters to develop an optimal pump schedule or recommend capital replacement or refurbishment.

We will install sub-metering at the largest sites to enable insight in the optimisation of treatment processes and inform decisions where there are options for flow.

### Pump Interventions

We will reset our payback period used to justify investment in the replacement of pumps, variable speed drives and motors, targeting a return within a rolling -year period. Pump replacements achieving this target will be promoted for delivery.

Our Pump Optimisation Efficiency Tool (POET) will be used to proactively identify pumps that are predicted to fail and drive our replacement strategy, bringing benefits to site resilience alongside energy savings.

## Continued Development of Self Generation Capacity

During the 2020-2025 period, we invested heavily in Solar Energy generation with our first two solar farms at our Chertsey and Walton treatment sites coming online in Spring 2022.

A second phase of solar is underway in 2023 with the sites expected to be commissioning by the end of the 2023-24 financial year and the programme complete by 2025. We expect this investment to realise circa 10% of our consumption from our own solar production by the end of 2025.

The programme has been phased and prioritised based on the availability of land and the consumption of energy on the specific sites, as well as the ease of mobilisation and cost of procuring the necessary equipment to ensure benefits are realised as early as possible.

Further phases are in development for sites which do not have significant energy consumption to allow energy produced to be supplied to the Grid rather than offsetting our energy consumption. Any energy supplied to the grid would provide an economic hedge against the market price we are exposed to in our operating costs.

## Managing residual risk via intelligent purchasing

Hedging allows the delay or smoothing of changes in market prices. It provides a benefit during a period of rising prices, but this benefit is time limited. Eventually hedges mature and new hedges need to be entered into, which will be based on market prices. As such, the company is exposed to the market, over which it has no control.

Whilst hedging has been an effective risk management tool and removed energy price risk for a proportion of our exposure in future years, it has also meant we have hedged at prices higher than previously anticipated or our revenues allow for in the PR19 Determination.

It is worth highlighting that a significant proportion of energy costs are driven by Grid costs which cannot be hedged. Grid cost, also referred to as Pass Through Costs, include BSUoS, TNUoS, DUoS, FiTs and many other components. In 2020-21 these were £15.7m and have increased to £16.7m in the 2022-23 budget.

We have implemented a rolling programme of forward purchases. The key principles of this programme are:

- Consistent and phased approach, buy little and often, avoiding any single good or single bad decision.
- Prioritise nearer term risks.
- Have budget certainty a minimum of 6 months in advance.
- Recognition that there is no risk avoidance strategy. If we choose to do nothing it has to be an active decision.

The policy compels the buying committee to meet a set forward purchasing profile at two test dates in each year (31 March and 30 September).

Ultimately, forward purchasing is a risk reduction tool, not a cost management tool. The current market price for a future session is locked in, buying certainty and avoiding significant price fluctuations. At present we are fully hedged to the end of the 2020-2025 period, but do not have any hedging in place for the 2025-2030 period yet.

## Water Treatment Costs

### Overview

We include below the key elements of the cost of abstracting and treating water across our communities. We forecast expenditure of approximately £158m for the period 2025-2030, representing 17% of our forecast operating costs. The principal investments under this section of the plan are shown in Table 23.

Table 23: water treatment costs

Category	Subcategory	2025-2030
Water Treatment	Bulk Imported Water	£50.4m
	Abstraction Licences	£32.5m
	Chemicals & Sludge	£43.0m
	Maintenance and Materials	£28.1m

We developed our cost forecast in line with the preparation of our WRMP and overlaid our detailed modelling of costs from across our production sites estate, from our smaller, groundwater based, sites up to our key strategic sites on the river Thames. We include within base for 2025-2030 the additional costs of operating our water conditioning works at Sundon, a key 2020-2025 enhancement scheme that allows us to reduce our abstraction of groundwater.

### Bulk Imported Water

We remain reliant of the import of bulk water, in particular from the Grafham reservoir, to supply our customers. During the 2020-2025 period, we have experienced more extreme weather events, both high temperature and freeze-thaw events, leading to an increased requirement to draw on supplies provided by our partners. We have reviewed our production estate following these events and secured additional resilience and capacity.

### Abstraction Licences

We forecast a small annual increase in the cost of abstraction licences during the 2025-2030 period, following the large increase in costs experienced in 2022/23.

### Chemicals & Sludge

We use a variety of treatment chemicals across our production process. We have experienced significant upward cost pressures during the 2020-2025 period, driven by disruption to international supply chains and the impact of the rises in the wholesale price of energy, which is a key input to the manufacture and transport of chemicals. We forecast a reduced level of distribution input during the 2025-30

period, leading to a lower overall use of chemicals, mitigating the impact of price increases. Table 24 shows our estimated price increases during the 2020-25 period.

Table 24: estimated chemical cost increases

Chemical	Price Increase
Sulphuric acid	124.8% increase
Caustic Soda	241%
HCl	60.7%
Ferrous Chloride	No increase
Ferric Chloride	267%
Sodium Hypochlorite	13%
PACL	20.5%
Orthophosphoric Acid	25.7%
Sodium Bisulphite	15%
Polyelectrolyte	5%

We forecast chemical prices to settle during the 2025-2030 period at a higher level than those experienced prior to 2020. We will continue to work with our supply chain partners to manage these risks through forward purchasing.

### Maintenance & Materials

These costs include key spares, maintenance including our lagoon inspection and cleaning programme and other day to day maintenance costs. We challenge these requirements alongside our capital maintenance on treatment assets in order to secure the right spend at the right time to provide a resilient service to our customers.

## Management & General

### Overview

This section of our plan includes our forecast of costs that support the delivery of our service to customers and meet our obligations to the wider community. By their nature, costs in this section are more difficult to avoid in full, although mitigating action can be taken. We forecast expenditure of £148m in respect of management and general (M&G) costs. Table 25 notes the key elements of cost in this area.

Table 25: management and general forecasted costs

Category	Subcategory	2025-2030
Management & General	Business Rates	£68m
	Insurance	£25m
	Software & Hosting	£42m
	Others incl. Net Zero	£10m

## Business Rates

Cumulo business rates are an important element of our cost base. Our rates liability is set by the UK government Valuation Office Agency (VOA) for a five-year period, with the next review due in 2026. In the 12-24 months before the review process, we work with industry leading experts and the VOA to ensure that our liability is calculated correctly, and that the VOA has fairly reflected the position of our business.

We forecast our rates liability for the 2025-2030 period to be £68m. This forecast is based on our valuation received in 2023 covering the periods to 2026, and a further forecast for the remaining four years of the 2025-2030 period. We expect our rates liability to increase as the small business multiplier increases throughout the 2025-2030 period. We forecast our Rateable Value to remain flat at the next valuation. We are pleased to continue to share the benefits of the work we undertake on business rates with our customers.

## Insurance

Our forecast insurance costs are based on our current levels of claim experience, which drives future premiums, particularly for Public Liability. We investigate all claims against us robustly, seeking to apply root cause analysis to promote learning and to mitigate such incidents in future.

## Software & Hosting

These software costs are a part of our overall technology business case and are discussed above.

## Net Zero

Our Net Zero proposals for 2025-2030 focus on securing the internal resource to provide leadership, coordination, oversight, and technical expertise to manage climate risks and deliver our Net Zero targets and ambitions. Development of our internal resources allow us to retain knowledge and engage our people more effectively than through the use of third parties.

We plan to invest £3.4m during 2025-2030 to build a delivery team to embed a Net Zero culture across our business and supply chain. This investment will allow us to respond to the following regulatory and statutory requirements:

- UK Government's Net Zero 2050 target – which requires UK based emissions to be reduced to 'net zero' by 2050 – our Strategic Direction Statement sets out that we will achieve this by 2045.
- Ofwat's New Operational Greenhouse Gas (GHG) Performance Commitment for AMP8 – which will require us to reduce the emissions intensity of the service we provide by reducing operational emissions.
- Reporting for scope 3 emissions to Ofwat – and anticipated inclusion of scope 3 emissions in performance commitments in AMP9.



- Mandatory reporting to investors and the public using the Task Force for Climate Related Financial Disclosures (TCFD) framework – through our Annual Report.
- Climate Change Adaptation Reporting – requiring an updated report to Defra every 5 years.

Additionally, we have the following business, reputational and financial drivers:

- Water UK's Operational Net Zero 2030 – which outlines how water companies should reduce operational emissions to 'net zero' by 2030 and to which we have committed to achieve.
- Commitments to investors to develop Science Based Targets (SBTi) for emissions reductions.
- Development of 'green financing' which is predicated on achieving emissions reductions.